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PATENT COOPERATION TREATY

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From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

PCT

To:

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Property Management
P.O. Box 27
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**NOTIFICATION OF TRANSMITTAL OF
INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

(PCT Rule 71.1)

Date of mailing
(day/month/year)

27-04-2004

Applicant's or agent's file reference

20031013W0

IMPORTANT NOTIFICATION

International application No.

PCT/FI2003/000258

International filing date (day/month/year)

07-04-2003

Priority date (day/month/year)

09-04-2002

Applicant

Outokumpu Oyj
et al

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.

4. REMINDER

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

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PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY (Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 20031013 WO	FOR FURTHER ACTION See Form PCT/IPEA/416	
International application No. PCT/FI 2003/000258	International filing date (day/month/year) 07.04.2003	Priority date (day/month/year) 09.04.2002
International Patent Classification (IPC) or national classification and IPC C23C 22/52, C23C 22/63		
Applicant Outokumpu Oyj et al		

<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of <u>3</u> sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p style="margin-left: 20px;">a. <input checked="" type="checkbox"/> (sent to the applicant and to the International Bureau) a total of <u>6</u> sheets, as follows:</p> <div style="margin-left: 40px;"> <p><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> </div> <p style="margin-left: 20px;">b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) _____, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>																									
<p>4. This report contains indications relating to the following items:</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%; text-align: center;"><input checked="" type="checkbox"/></td> <td style="width: 30%;">Box No. I</td> <td>Basis of the report</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. II</td> <td>Priority</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. III</td> <td>Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. IV</td> <td>Lack of unity of invention</td> </tr> <tr> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td>Box No. V</td> <td>Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. VI</td> <td>Certain documents cited</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. VII</td> <td>Certain defects in the international application</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. VIII</td> <td>Certain observations on the international application</td> </tr> </table>		<input checked="" type="checkbox"/>	Box No. I	Basis of the report	<input type="checkbox"/>	Box No. II	Priority	<input type="checkbox"/>	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability	<input type="checkbox"/>	Box No. IV	Lack of unity of invention	<input checked="" type="checkbox"/>	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement	<input type="checkbox"/>	Box No. VI	Certain documents cited	<input type="checkbox"/>	Box No. VII	Certain defects in the international application	<input type="checkbox"/>	Box No. VIII	Certain observations on the international application
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<input type="checkbox"/>	Box No. VIII	Certain observations on the international application																							

Date of submission of the demand 23.10.2003	Date of completion of this report 23.04.2004
Name and mailing address of the IPEA/SE Patent- och registreringsverket Box 5055 S-102 42 STOCKHOLM Facsimile No. +46 8 667 72 88	Authorized officer Ingrid Grundfelt/MP Telephone No. +46 8 782 25 00

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/FI 2003/000258

Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

☒ This report is based on a translation from the original language into the following language English, which is the language of a translation furnished for the purposes of:

- ☐ international search (under Rules 12.3 and 23.1(b))
☒ publication of the international application (under Rule 12.4)
☐ international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the **elements** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report):*

☐ the international application as originally filed/furnished

☒ the description:

pages 1-11 as originally filed/furnished
 pages* _____ received by this Authority on _____
 pages* _____ received by this Authority on _____

☒ the claims:

pages _____ as originally filed/furnished
 pages* _____ as amended (together with any statement) under Article 19
 pages* 12-17 received by this Authority on 15.04.2004
 pages* _____ received by this Authority on _____

☐ the drawings:

pages _____ as originally filed/furnished
 pages* _____ received by this Authority on _____
 pages* _____ received by this Authority on _____

☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages _____
☐ the claims, Nos. _____
☐ the drawings, sheets/figs _____
☐ the sequence listing (*specify*): _____
☐ any table(s) related to the sequence listing (*specify*): _____

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages _____
☐ the claims, Nos. _____
☐ the drawings, sheets/figs _____
☐ the sequence listing (*specify*): _____
☐ any table(s) related to the sequence listing (*specify*): _____

* If item 4 applies, some or all of those sheets may be marked "superseded."

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/FI 2003/000258

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	<u>1-40</u>	YES
	Claims	_____	NO
Inventive step (IS)	Claims	<u>1-40</u>	YES
	Claims	_____	NO
Industrial applicability (IA)	Claims	<u>1-40</u>	YES
	Claims	_____	NO

2. Citations and explanations (Rule 70.7)

Documents cited in the International Search Report:

D1: WO-9529207-A1
D2: US-5691001-A
D3: FI-36426-A
D4: Patent Abstracts of Japan, abstract of JP-7150365-A, publ.
1995-10-31

The cited documents represent the general state of the art.
The invention defined in claims 1-40 is not disclosed by any of these documents.

The cited prior art does not give any indication that would lead a person skilled in the art to the claimed method for preparing an artificial patination material and to the patination material. Therefore, the claimed invention is not obvious to a person skilled in the art.

Accordingly, the invention defined in claims 1-40 is novel and is considered to involve an inventive step. The invention is industrially applicable.

PATENT CLAIMS

1. A method for preparing an artificial patination material to substrates preferably made of copper or copper alloys, in which method at least one copper salt is used as a raw material, which is precipitated with an alkali metal hydroxide, the formed sludge is filtered for forming a precipitate, **characterized** in that the reaction between the raw material and the alkali metal hydroxide is stopped with water, the precipitate is dispersed with powerful mixing and an addition of a dispersing agent, and in addition, both an oxidative agent is used and carbon as an agent for catalysing natural patina forming and at least one stable metal compound as a colour pigment for achieving desired colour and/or colour tinge.
2. A method according to claim 1, **characterized** in that at least one of the group including copper sulfate, copper nitrate, copper chloride, copper carbonate or their mixture is used as the raw material of the artificial patination material.
3. A method according to claim 1 or 2, **characterized** in that copper sulfate is used as the raw material of the artificial patination material.
4. A method according to any one of claims 1 to 3, **characterized** in that manganese dioxide is used as an oxidative agent.
5. A method according to any one of claims 1 to 4, **characterized** in that an iron compound is used as a raw material of the artificial patination material.
6. A method according to any one of claims 1 to 5, **characterized** in that an iron compound is used as an oxidative agent.

7. A method according to any one of claims 1 to 6, **characterized** in that an inorganic metal compound is used as colour pigment.
- 5 8. A method according to any one of claims 1 to 7, **characterized** in that an iron compound is used as a colour pigment.
- 10 9. A method according to any one of claims 1 to 7, **characterized** in that iron and aluminium compound, iron, manganese and aluminium compound or iron, manganese, silicon and aluminium compound is used as a colour pigment.
- 15 10. A method according to any one of claims 1 to claim 7, **characterized** in that manganese compound is used as a colour pigment.
- 20 11. A method according to any one of claims 1 to claim 7, **characterized** in that copper compound is used as a colour pigment.
12. A method according to claim 11, **characterized** in that copper carbonate compound, copper silicate- copper carbonate compound or calcium copper silicate compound is used as a colour pigment.
- 25 13. A method according to any one of claims 1 to claim 7, **characterized** in that chromium(III) compound is used as a colour pigment.
14. A method according to any one of claims 1 to 7, **characterized** in that magnesium- aluminium- and potassium compound is used as a colour pigment.
- 30 15. A method according to any one of claims 1 to claim 7, **characterized** in that coal is used as a colour pigment.

16. A method according to any one of claims 1 to claim 15,
characterized in that the amount of the colour pigment in the
patination material dry matter is at most 5 %.
- 5 17. A method according to any one of claims 1 to 16, **characterized** in
that an alkyd-based compound is used as a binder and the binder is
added to the patination material during its preparation.
- 10 18. A method according to claim 17, **characterized** in that the amount of
the binder is at highest 10% of the patination material dry matter.
- 15 19. A method according to any one of claims 1 to 18, **characterized** in
that the amount of dry matter in the patination material is between 15
– 50%.
- 20 20. An artificial patination material to substrates preferably made of
copper or copper alloys wherein at least one copper salt is used as a
raw material, precipitated with an alkali metal hydroxide and the
formed sludge filtered for forming a precipitate, **characterized** in that
the reaction between the raw material and the alkali metal hydroxide
was stopped with water, the precipitate dispersed with powerful mixing
and an addition of a dispersing agent, and the paste contains an
oxidative agent and carbon for catalysing natural patina forming and
at least one stable metal compound is used as a colour pigment for
25 achieving desired colour and/or colour tinge.
21. A patination material according to claim 20, **characterized** in that an
alkyd-based compound is used as a binder.
- 30 22. A patination material according to claims 20 or 21, **characterized** in
that at least one of the group including copper sulfate, copper nitrate,

copper chloride, copper carbonate ore their mixture is the raw material of the patination material.

- 5 23. A patination material according to any one of claims 20 to 22,
 characterized in that copper sulfate is the raw material of the
 patination material.
- 10 24. A patination material according to any one of claims 20 to 23,
 characterized in that a part of the patination material is posnjakite
 ($\text{Cu}_4\text{SO}_4(\text{OH})_6 \cdot 2\text{H}_2\text{O}$) with a grain size between 0,2 – 80 μm .
- 15 25. A patination material according any one of claims 20 to 24,
 characterized in that a grain size of the patination material particles is
 between 0,2 – 100 μm .
- 20 26. A patination material according any one of claims 20 to 25,
 characterized in that the amount of dry matter in the patination
 material is between 15 – 50%.
27. A patination material according to any one of claims 20 to 26,
 characterized in that the binder covers only partially the patination
 material particles.
- 25 28. A patination material according to any one of claims 20 to 27,
 characterized in that inorganic metal compound is used as a colour
 pigment.
29. A patination material according to any one of claims 20 to 27,
 characterized in that iron compound is used as a colour pigment.
- 30 30. A patination material according to any one of claims 20 to 27,
 characterized in that iron and aluminium compound, iron, manganese

and aluminium compound or iron, manganese, silicon and aluminium compound is used as a colour pigment.

5 31. A patination material according to any one of claims 20 to 27, **characterized** in that manganese compound is used as a colour pigment.

32. A patination material according to any one of claims 20 to 27, **characterized** in that copper compound is used as a colour pigment.

10 33. A patination material according to claim 32, **characterized** in that copper carbonate compound, copper silicate-copper carbonate compound or calcium copper silicate compound is used as a colour pigment.

15 34. A patination material according to any one of claims 20 to 27, **characterized** in that chromium(III) compound is used as a colour pigment.

20 35. A patination material according to any one of claims 20 to 27, **characterized** in that magnesium, aluminium and calcium compound is used as a colour pigment.

25 36. A patination material according to any one of claims 20 to 27, **characterized** in that coal is used as a colour pigment.

37. A patination material according to any one of claims 20 to 36, **characterized** in that the amount of the binder is at highest 10% of the patination material dry matter.

30 38. A patination material according to any one of claims 20 to 37, **characterized** in that the storage time is several months.

39. A patination material according to any one of claims 20 to 38,
characterized in that the paste is storable in room temperature.
- 5 40. A patination material according to any one of claims 20 to 39,
characterized in that the amount of the colour pigment is at most 5%
of the patination material dry matter.